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ABSTRACT

The major aims of the "Annual Review of Information Science and Technology" are (1) to describe and appraise progress in information science and technology; (2) to provide a systematic, dependable tool that can relieve professionals from winnowing through a wealth of literature in their field each year; (3) to direct the reader to people, projects, institutions and literature that may be helpful to them in their work; (4) to construct a permanent reference file in which the reader can trace the work of a person, a project, an institution, or a problem or topic of interest and (5) to introduce somewhat greater order into the field of information science and technology. (Author/MM)

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THE ANNUAL REVIEW OF INFORMATION SCIENCE AND TECHNOLOGY: ITS AIMS AND IMPACT

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(talk given at Eighth Annual National Information Retrieval Conference, Philadelphia, Pennsylvania) May 1971

The invitation to give this talk comes at an opportune time. This is the height of the production cycle for Volume 6 of the Annual Review, and the time in which we begin to intensify our work for Volume 7 covering the 1971 literature. In addition, I have just seen a very interesting and provocative paper on the Annual Review written by Dr. Tefko Saracevic of Case Western Reserve University. Tefko was kind enough to send me the paper and ask for my reactions. Although I disagree with some of his conclusions, he is a respected colleague, and his criticisms and suggestions deserve close attention.

Recent Criticisms of the Annual Review

Tefko's paper raises several major points of concern with the Annual Review series. The first of these involves the charge that the approach of the reviewers, i.e., the chapter authors, is "uncritical" and that one cannot obtain an impression regarding the quality of the works being reviewed. Two solutions are proposed. One is to make the approach to reviewing more critical and evaluative. The second is to abandon the present format of the Annual Review and to have, instead, a two-part publication. The first part would contain state-of-the-art monographs covering topics as a whole (rather than a one- or two-year slice); the second part would contain a critical annotated bibliography of the year's literature.

The second criticism is that there is too much emphasis on technology. It is argued that the Annual Review does not distinguish between information science, information technology, and information practice. It is also

argued that there is excessive orientation toward technology in general and computers in particular and that the Annual Review is, in effect, still promoting technology in spite of its "failures." Three solutions are proposed. First, cut the emphasis on technology. Second, treat information science as a science and give theory a prominent review, when and where it exists. Third, pay more attention to social and philosophical issues in the field.

The third major criticism is that the wrong literature is being reviewed. It is argued that there are too few citations to items from journals, and far too many citations to technical reports and other kinds of items printed without any editorial constraints. The statement is made: "Very few of these items are worthwhile, and those that are end up anyhow as journal articles." Two solutions are proposed. First, it is suggested that technical report literature be omitted, with very, very few exceptions. Brochures, public relation releases and the like should be omitted completely. Papers presented at meetings that had no published proceedings should be omitted completely, since "these are completely inaccessible." The second suggestion is that "qualitative judgment" should be imposed upon the literature that is cited, giving priority to articles from journals having peer review procedures. News items, announcements, features from journals, if treated at all, should be held at an absolute minimum.

Tefko's review had other points worthy of mention, although there is not really time to discuss them. For example, the following criticisms were made:

- The Annual Review is rather blind to the distinctions between things that are operational, in experimental use, or only figments in the minds of their conceivers.

- The chapter authors are forced to construct their own topic organization.

- The structure of the Annual Review content is based on the pattern of large grants as awarded by major Federal granting agencies in the 1960's.

- The structure is frozen, so one cannot discern whether an area is rapidly developing or declining.

I don't want to give the impression that the paper was totally negative about the Annual Review. It was, in fact, quite complimentary on several aspects of the series and about my role in it. However, it is important to give particularly careful attention to the criticisms and suggestions for improvement. As I told Tefko, I am a firm believer not only in systematic evaluation but also in having such evaluation done by capable--but essentially disinterested--objective persons. Whatever else I am, I am not disinterested in any matter relating to the Annual Review. So if I disagree with some of the criticisms and bite back somewhat, you may need to discount my views to some extent.

How one should react to the several criticisms I have reported depends on two things:

- What one believes an annual review is for, i.e., the impact it is intended to achieve.
- Whether that intended impact is, in fact, being achieved.

To help you think about the various criticisms and suggestions, I'd like to tell you something about the purposes of the Annual Review, the mechanics of production, and the impact of the series.

Purposes and Mechanisms of the Annual Review

Annual reviews are not new entities: One organization has been publishing annual reviews for about 25 years and now publishes more than a dozen series. The plan, format, and content of the Annual Review were based on this history and were not invented from whole cloth.

Few reviews are explicit about their purposes, but their general purpose is to describe and appraise progress in the particular discipline concerned, for a particular period of time. The major purpose of the Annual Review is to describe and appraise progress in information science and technology. I also have had other, more detailed purposes, e.g.,

- To provide a systematic, dependable tool that could relieve professionals in their field of the necessity of trying to read 3-6000 pieces of literature in their field each year.

- To direct our readers to people, projects, institutions, and literature that might be helpful to them in their work.

- To construct an information base for our field, i.e., a permanent reference file in which one could trace, over time, the work of a person, a project, an institution, or a problem or topic of interest.

- To introduce somewhat greater order into our conceptualization of our field.

It is important for you to notice that there are some objectives that I did not mention, e.g.,

- To provide a comprehensive bibliography of the field.
- To provide historical overview of the field.
- To review a given area from the beginning of time.
- To describe a single, particular project in detail.
- To list the major professional gatherings of the past year or the ones planned for the coming year.
- To list available hardware, software, or services.
- To teach novices.

The point I am making is that there are many kinds of information tools and many kinds of needed information and it is important, in thinking about the Annual Review, not to confuse the tool we are trying to have with the ones we are not trying to have. I'll come back to this point.

Production of the Annual Review

The basic mechanisms for producing all annual reviews are quite similar: define the contents, select the authors and instruct them, edit the contributions, and publish. However, the Annual Review has a very complex and demanding mechanism. It differs from other annual reviews that I know about in five major ways:

- We provide authors with bibliographies. The 1969 bibliography contained over 5000 items.

- We provide very detailed instructions and guidance and work hard to avoid or minimize interface problems between chapters.

- We have instituted a merciless review process to achieve the desired level of quality.

- In spite of all the extra steps in our cycle, we manage to get the Annual Review out in roughly half the time required by most other annual reviews.

- We undertake empirical research to evaluate our Annual Review. I know of no other annual review publication that can make that statement.

Our annual review process is as follows: Each year, the Editor and an Advisory Committee appointed by ASIS consider and agree on the content and organization of the next volume and on the authors to be invited. I initiate the process, drawing on (1) the framework provided by past ARIST volumes,

(2) the amount of literature in areas of interest to the Annual Review, (3) the appraisals of the authors of the current volume regarding areas of growing or declining importance, and (4) the date of the most recent coverage of particular areas in the Annual Review. Options are posed to the Advisory Committee, which indicates preferences and priorities for coverage and chapter authors.

The chapter authors are provided with an Author's Guide indicating what is expected of them and providing guidance and advice on handling what for nearly everyone is an exceptionally difficult--at times almost impossible--task. They are asked to screen literally hundred of potentially relevant items of recent--usually past-year--literature; discard the outdated and unimportant; and then, in their chapter, describe and appraise progress in their area. They are asked--in fact, told--to make evaluative judgments about both the technical work and the literature that describes it.

The first draft submitted by each author undergoes exhaustive technical review by four members of the Advisory Committee and by fellow professionals with expertise in the particular area of the chapter. (I and my staff review and critique the draft at the same time.) Nearly all of the reviewers are past Annual Review chapter authors and understand both the content requirements and the authors' problem. Their comments, suggestions, and criticisms--together with the marked-up manuscript are returned to me for analysis and integration into a 5- to 15-page detailed feedback letter. The author is encouraged to attend to as much of the feedback as he considers valid and to make the corrections and changes indicated. He then rewrites the chapter and submits it for final editing before publication.

Impact of the Annual Review

There are two bodies of evidence on the impact of the Annual Review. One stems from a study conducted in 1967, which was, to my knowledge, the first and only empirical study of any annual review. We contacted over 10,000 individuals to determine who had actually used the Annual Review , who had seen or heard of it but not used it, and who had neither seen nor heard of it. Separate questionnaires were sent out to samples from each of these groups to obtain more detailed data about their professional communication methods and, for the Annual Review users, the ways in which they had used the book. A second body of evidence is being developed now, as part of a survey of ASIS members.

The results from both of the studies are very interesting and, in some cases, startling. One of the most interesting findings is that an annual review serves many, quite different purposes. Our original survey showed that the purposes for which the Annual Review was rated "Very Useful" were:

- Keeping up with current work in peripheral areas of interest (35 percent)
- Keeping up with current work in own areas of interest (35 percent)
- Learning about an area not within own professional specialty (22 percent)
- Checking on particular projects or ideas (19 percent)

A number of other uses were mentioned in the earlier survey as less important, including checking on the activities of individuals reading the original literature more selectively, identifying areas of information science that require further research, etc. We speculated about the relatively low value placed on the reference use of the Annual Review (i.e., "checking on particular

projects or ideas"), and, at the time, I stated my belief that our figures underestimated what would come to be seen as the true reference value of the series. The new findings bear out this prediction. "Checking on particular projects or ideas," ranked fourth in 1967, has jumped to first, with the percentages of users saying "Very Useful" going from 19 percent to 47 percent. It is interesting that nearly all the other percentages are also up from 1967: "Keeping up with current work in own areas of interest" rose from 33 to 45 percent; "Keeping up with current work in peripheral areas of interest" rose from 35 to 40 percent; and "learning about an area not within own professional specialty" rose from 22 to 33 percent.

The extent of use of a given volume is fairly stable. In 1967, the median number of chapters read was four; in 1971, it is still four. In 1967, the median number of chapters skimmed was four; now it is about five. Incidentally, many people believe that annual reviews are read from cover to cover; that is why we have had suggestions for eliminating all overlap among chapters and for integrating all chapter references in one large, combined list of references. However, the fact is that most people actually read only about four chapters, so it would be a disservice to the readers if the chapters were not reasonably self-contained and could not be read independently of one another.

The two most read chapters in 1967 were the ones on library automation and on information needs and use; they are still the ones most read. The least read chapter in 1967 was the one on new hardware; last year, it was the one on computer technology. This suggests that the interest patterns of our readers may be fairly stable.

The data showed a number of interesting correlates of use of the Annual Review. The largest single group of users, in the 1967 survey, worked in industrial or business firms. Exactly the same finding--and even the same percentage, 36--came out of our more recent survey. We also learned, in the earlier survey, that users differ from nonusers in a number of ways, particularly on measures of professional activity, such as meetings attended, professional papers written and presented, etc. The users were uniformly higher on all measures of professional activity. Also, those users who had been in the field 10 years or more tended to use the Annual Review more than those who had been in the field for less time. This finding suggested that we were indeed hitting the target audience for the Annual Review.

With respect to impact, I must say that measuring it is rather difficult. Ideally, one would like to have data compiled over a period of time, rather than data collected at only a single point in time. Although we do not have a great deal of the most desirable kind of data, we do have some clear evidence of the impact of the series from several questions asked in both surveys. For example, we asked: "Have you ever reexamined publications you had previously read, as a result of reading the Annual Review? (Yes/No)." In 1967, 53 percent of the users answered "yes;" in 1971, the "yes" figure was 68 percent.

We also asked why readers examined any of the publications again. The primary reasons checked were to review forgotten details (30 percent in 1967 and 38 percent now), and to reevaluate a publication in light of an Annual Review author's comments (20 percent in 1967 and 45 percent now).

We asked: "After reading the Annual Review, have you tried to obtain some of the publications cited in it that you hadn't read before? Yes/No." In 1967, 55 percent of the respondents said "yes;" in 1971, the "yes" figure was 84 percent.

We asked: "As a result of reading the Annual Review, have you tried to contact any of the authors mentioned for information regarding their current work? Yes/No." In 1967, 10 percent of the users said "yes;" in 1971, the "yes" figure was 22 percent.

We asked: "Has the Annual Review itself ever suggested to you specific ideas for future research projects or studies? Yes/No." In 1967, 45 percent of the users said "yes;" in 1971, the "yes" figure was 50 percent.

These findings strongly suggested that the Annual Review has had--and continues to have--a strong positive impact on professional communication. One of the interesting aspects of the earlier study, which we have not yet explored in the more recent study, was the lack of any evidence that use of the Annual Review was associated with decreased use of the primary literature. This is consistent with the findings of a "synergistic" effect among information channels: information channels interact and mutually reinforce one another. It would appear that the Annual Review has this kind of effect for many professionals.

Responses to the Issues, Criticisms, and Recommendations

Having provided this context for you, I will now address the three major sets of criticisms and suggestions I mentioned at the outset.

The "Absence" of Critical Evaluation. I agree with the feeling that the review should be something more than a critical annotated bibliography. I disagree on several things. I do not believe it is fair to characterize the approach taken by Annual Review authors as "uncritical," although in some cases it is true. I also do not believe that the items discussed in the Annual Review receive equal treatment and equal weight or that the reader cannot obtain an impression of what works are of high or low quality. There are many clues to comparative value, including the length of discussion, prominence in a given section, and presence of evaluative comments, of which I believe there are many. However, one thing I will concede is that the reader cannot readily identify those works of no quality. That is the part of the literature that I tell the author to throw in the wastebasket before he writes the chapter.

Although it may not always be clear to our readers, it is a firm policy of the Annual Review--and always has been--to encourage critical evaluation. So why isn't there more of it? One reason is that we discourage evaluation that does not have a firm basis. We discourage essays filled only with opinion. If a review chapter is not firmly grounded, it is--in the words of our advisors--"just one more damn thing to read." It is definitely not our purpose in the Annual Review to create one more damn thing to read, but rather to remove part of the necessity to find and read all those things.

A second reason for the lack of critical evaluation is the author's own self-control, based on his awareness of the powerful platform that the Annual Review provides. A few authors have been a little careless with the privilege: one wanted to spend several pages lambasting someone's poor work. I dissuaded him, pointing out that the time-honored way for an annual review to handle nonsense is to leave it out, not give it precious space that ought to be used for really important and useful work.

I believe that the suggestion we abandon the present Annual Review format and go to a combination of state-of-the-art reports and an annotated bibliography stems from a fundamental misunderstanding of the purpose of annual reviews. An annual review is:

- Not a state-of-the-art report
- Not an annotated bibliography
- Not a critical analysis
- Not a list of suggested readings or a buying list
- Not a current awareness device
- Not a "who's who" or "who's doing what" reference tool
- Not a primer
- Not a textbook

It is clear from our data that an annual review is, in fact, a particular and unique art form that is something of all of these, without being optimized for any particular one. It serves many quite different uses for people of different professional levels and with different responsibilities. I agree that there should be more and better state-of-the-art studies and better annotated

critical bibliographies, but neither of these is an appropriate substitute for an annual review.

In our recent survey, we put the question directly: "Does the field of information science need more state-of-the-art reports (monographs covering each topic in full) than are usually published each year?" Sixty-seven percent of the users said "yes," but only one out of ten persons thought that the state-of-the-art reports should replace the Annual Review. Nine out of ten persons thought that they should be established as a separate type of publication. It may be appropriate (if painful) to see the Annual Review criticized for not being a good annual review, but it hardly seems appropriate to criticize it because it is not something different.

The "Overemphasis" on Technology. It would be tempting to make a copout and say that the content is selected and agreed to by the ASIS Advisory Committee. This is partly true, of course, but the real answer is that the Annual Review was intended to serve a particular target audience--the membership of ASIS--plus professionals in fields closely related to ours. Most ASIS members are not engaged in science: they are engaged in information technology, information applications, and information service. That was a fact of life in 1964, when I first proposed the Annual Review and insisted that we make the full title Annual Review of Information Science and Technology. It is still a fact of life. The Annual Review includes relatively little science because our membership, and that of related professional associations, are involved readily little in scientific activities.

The recommendation was made that we give theory a prominent review, when and where it exists. Almost every year, for the past 7 years, I have asked our advisors about handling information science theory. I asked them again this year whether we should have a chapter on theory, or cover theory in an occasional chapter, or cover theory in the context of other chapters. The majority view has always been the same: cover theory in the context of other chapters.

The recommendation that we pay attention to the social and philosophical context of our field is one to which I have already given special attention. I recently suggested to our Advisors that we develop a new chapter on the "Social Implications of Information Science." After they agreed, I spent 2 months trying to find a qualified and interested author. In March I had to abandon the search as far as Volume 7 is concerned, but I would welcome suggestions regarding qualified author candidates for a later volume.

Inclusion of the "Wrong" Literature. Of all the assertions and recommendations in the appraisal, the most surprising to me is the assertion that very few technical reports are worthwhile and the recommendation that the Annual Review essentially omit such reports from its coverage. In response, I must point out that the Annual Review authors, working both from their own literature sources and from ASIS-provided bibliographies containing up to 5000 current items of potential interest annually, have selected the items that they deem worthy of discussion. Some authors have, in fact, examined as many as 700 books, journal articles, reports, and other printed items, ending up with 100 to 200 items that they consider particularly worthy of discussion or mention. To

suggest that these chapter authors are unable to determine what is worthwhile and that one should substitute for their professional judgment the simple criterion "was it published in a journal?" is incredible to me. If the chapter authors, after all their work, cannot judge what is useful information, who can?

The argument can be made that any worthwhile technical reports eventually end up in journals anyhow. While this may conceivably be true for fields such as physics, chemistry, and medicine, which have a well-established journal structure, it is decidedly not true for information science. Many of the individuals that I personally regard as "real pros" in information do not publish a great deal, not only because they are heavily engaged in a continuing stream of new project work (both research and applied) but because the technical reports they do write are not journal-sized. Let's face it: journals publish journal-size packages. For every good report that finds its way into hot type, I believe that there are several others that do not. The point, of course, is not that technical reports as a class are better than published articles, nor that articles are better than reports. It is that evaluative judgments should be made by professionals on the basis of what is said, rather than on the medium in which it is said.

In our recent survey, we asked ASIS members directly: "How useful would it be to omit technical report literature from Annual Review coverage, confining it largely to journal literature and books?" Five choices were posed:

( ) Much less useful
( ) Somewhat less useful
( ) Equally useful
( ) Somewhat more useful
( ) Much more useful

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Of the users, 87 answered either "Much less useful" (55) or "Somewhat less useful" (32). Only 3 said that this would be "Somewhat more useful" or "Much more useful." There is no question regarding the attitude of users of the Annual Review: technical reports should not be eliminated from our coverage.

Concluding Comments

In this talk I have necessarily dwelt on the points of disagreement with the appraisal paper. I must stress the fact that the appraisal paper also contains a number of points of fair and valid criticism, as well as suggestions well worth considering. I am grateful to Tefko for calling them to my attention and I, in turn, have promised to call them to the attention of the ASIS Advisory Committee. I also welcome comments and suggestions from other colleagues. All of us share an interest in the success of the Annual Review and in its service to the information science profession, and we can fulfill that interest best by intelligent dialogue along the lines Tefko has initiated.

I think it would be very unfortunate for the Annual Review if I were to become (or remain) complacent about needed improvements to the series. I'm grateful to the organizers of your meeting not only for the building part of it around the Annual Review but for providing me with an opportunity to bring several important issues to your attention and to stimulate your thinking about the future of the Annual Review series.